

# METHOD OF SENDING AND RECEIVING PERSONAL INFORMATION BY USING MOBILE TERMINAL

## BACKGROUND OF THE INVENTION

### Field of the Invention

The invention relates to a mobile terminal, and in particular, to a method of sending and receiving information using a mobile terminal.

### Discussion of the Related Art

A mobile telecommunication system generally comprises mobile terminals, a base transceiver station (BTS), a base station controller (BSC), and mobile switching centers (MSC). The BTS converts the signal format between the mobile terminals and the BTS for wire and wireless link. The BSC connects each component of the BTS to a cell operator, manages the BTS operation, manages service status of hardwares and softwares in the BTS, allocates resources related to call traffic, collects information for the BTS operation, and monitors sub-devices related to monitoring and anchoring of the BTS. The MSC is the connection point for the BSC management and for user traffic between a mobile telecommunication network and a wire telephone network or between two BTSs of the same mobile telecommunication system.

Recently, mobile telephones can be used to receive AM or FM radio broadcastings or to store and playback MP3 music downloaded in audio file formats from the internet. In addition, mobile telephones can be used for phone number storage, schedule management, and personal information management. Moreover, the latest models allow more items to be input and stored to allow management of more information.

FIG. 1 is a block diagram showing the internal structure of a mobile terminal in the

related art. Referring to FIG. 1, a typical mobile terminal includes a Radio  
Frequency/Intermediate Frequency (RF/IF) processing unit 100 for receiving and converting  
the frequency of RF signals to downlink signals; a modulator/demodulator (M/DM)101 for  
demodulating the converted RF signals from the RF/IF processing unit 100 or for modulating  
5 input digital voice signals; a data compression unit 102 for compressing the input digital  
voice signals; a Coder/Decoder (CODEC) 105 for converting the digital signals received by  
the RF/IF processing unit 100 into voice signals or for converting voice signals input through  
a microphone 111 into digital signals; and a DTMF generator 104 for generating Dual Tone  
Multi Frequency (DTMF) produced when a key button is entered.

10 The mobile terminal of FIG. 1 further includes a main processor 103 for executing  
call processing protocol to control the overall system of the mobile terminal and to connect a  
call; an audio amplifier 106 for amplifying analogue signals input from the CODEC 105 or  
microphone 111; a speaker 110; a liquid cell display window 107 for outputting the states of  
the mobile terminal; a memory 108 for storing variables used in programs and in the main  
15 processor 103, and storing information such as phone numbers; and a key pad 109 for  
receiving user inputs.

The operations of the mobile terminal in sending or receiving voice data is as follows.  
When sending voice data, a user inputs a voice signal after manipulating the mobile terminal  
to connect a call with another user terminal. The microphone 111 converts the input voice  
20 signal into an electrical signal and transmits the electrical signal to the CODEC 105. The  
CODEC 105 samples and converts the analog voice signal transmitted electrically from the  
microphone 111 to a Pulse Code Modulation (PCM) signal and transmits the PCM signal to  
the data compression unit 102. The data compression unit 102 then compresses the PCM

signal transmitted from the CODEC 105.

Thereafter, the main processor 103 executes spreading of the compressed PCM signal by multiplication with a Pseudo Noise (PN) code, and the M/DM 101 modulates the spread PCM signal for radio transmission. The RF/IF processing unit 100 converts the modulated voice signal output by the M/DM 101 from an intermediate frequency to a radio frequency and transmits the converted signal through an antenna.

The receiving operation is a reverse of the sending operation and a detailed explanation will be omitted. Briefly, a radio signal is received through the antenna, converted to an intermediate frequency by the RF/IF processing unit 100, demodulated by the M/DM 101, despread by the main processor 103, expanded and converted into a voice signal to be output through the speaker 110.

In sending/receiving personal information using a mobile terminal described as above, there have been problems. First, if a mobile terminal user wishes to send personal information to another mobile terminal during a call to the another mobile terminal, the mobile terminal user must send the personal information by voice through a speech channel. Similarly, when receiving personal information during a call, a mobile terminal user must make note of the personal information received by voice, and then manually input and store the information in the mobile terminal after terminating the call. Also, if a business card is exchanged, a mobile terminal user who receives the personal information on the business card must manually input and store the personal information in the mobile terminal, causing inconvenience.

Second, a message including personal information can be sent/received by a short message service. However, the receiving mobile terminal recognizes such personal message

as merely a short message and therefore, a user of the receiving mobile terminal must manually confirm and store the received personal information in the phone number list of the mobile terminal. For example, if the SMS includes a name "John" and phone number "019-123-4567," the user must confirm receipt and manually input each character J,o,h,n and numbers 0,1,9,1,2,3,4,5,6,7 into the phone number list of the mobile terminal. When such personal information is sent to a numerous number of mobile terminals, each user of the receiving mobile terminal must store the received personal information, causing great inconvenience.

#### SUMMARY OF THE INVENTION

Accordingly, an object of the present invention is to solve at least the problems and disadvantages of the related art.

Particularly, an object of the present invention is to provide a more efficient method of sending and/or receiving personal information through mobile terminals.

Another object of the present invention is to provide a more efficient method of sending/receiving personal information through mobile terminals using a short message service.

A further object of the present invention is to provide a method of quickly sending/receiving personal information through mobile terminals using a short message service by attaching an extension.

Additional advantages, objects, and features of the invention will be set forth in part in the description which follows and in part will become apparent to those having ordinary skill in the art upon examination of the following or may be learned from practice of the

invention. The objects and advantages of the invention may be realized and attained as particularly pointed out in the appended claims.

To achieve the objects and in accordance with the purposes of the invention, as embodied and broadly described herein, a method of sending personal information through a mobile terminal comprises (a) setting the mobile terminal to a personal information sending mode; (b) inputting personal information data for transmission; (c) inputting phone number(s) of receiving mobile terminal(s) for receiving the personal information data; and (d) sending the input personal information data to the receiving mobile terminal(s) using a Short Message Service (SMS).

A method of receiving personal information through a mobile terminal according to the present invention comprises (a) detecting if a received short message has a personal information data transmission; (b) selecting whether to store the received short message when the short message is for personal information data transmission; and (c) storing the received short message according to the result of the selection in (b).

#### BRIEF DESCRIPTION OF THE DRAWING

The invention will be described in detail with reference to the following drawings in which like reference numerals refer to like elements wherein:

FIG. 1 is a block diagram showing a mobile terminal in the related art;

FIG. 2 is a flowchart of a personal information sending method using a mobile terminal according to the present invention;

FIG. 3 is a flowchart of a personal information receiving method using a mobile terminal according to the present invention;

FIG. 4a ~ 4f show characters displayed in a liquid crystal display window of a mobile terminal in personal information sending mode using a mobile terminal in accordance with the present invention;

FIG. 5 shows characters displayed in a liquid crystal display window of a mobile terminal in personal information receiving mode using a mobile terminal in accordance with the present invention; and

FIG. 6 shows a user data field of a short message according to the present invention.

#### DETAILED DESCRIPTION OF THE INVENTION

Reference will now be made in detail to the present invention, examples of which are illustrated in the accompanying drawings.

Generally, the present system allows sending/receiving personal information through a mobile terminal. The personal information may be information such as the mobile terminal user's name, telephone number, home address, business, business address, and email address.

In the present invention, a mobile terminal inputs identification information of the user into a short message and sent to a receiving terminal by a short message service.

Such system of sending/receiving personal information through a mobile terminal can be divided into two procedures. Namely, a first procedure or method for sending personal information includes inputting the personal information into a mobile terminal and transmitting the personal information to a receiving mobile terminal. The second procedure or method is for receiving personal information. The personal information transmitting and receiving procedures will be described in detail below.

FIG. 2 is a flowchart of a personal information sending method using a mobile

terminal according to the present invention. Referring to FIG. 2, a mobile terminal user first manipulates menu button(s) on the mobile terminal to set the mode of the mobile terminal to a personal information transmission mode (S200). In the personal transmission mode, the user inputs user's personal information to be transmitted to a receiving mobile terminal (S201). Here, the user may input personal information including but not limited to user name, home phone number, mobile terminal number, home address, business address, and email address. Alternatively, the personal information can be stored in advance in the mobile terminal and read when necessary for transmission.

Subsequently, the user inputs the phone number of the receiving mobile terminal to which the user wants to transmit the personal information (S202). Here, the user can either input the phone number manually or automatically from a phone number list stored in the mobile terminal. Finally, the mobile terminal transmits the personal information of the user to the receiving mobile terminal when the user enters a command, for example, by pushing a send button (S203).

In the above procedure, the mobile terminal generates the personal information of the user into a short message and transmits the personal information according to a procedure for SMS. However, an additional identification information is inserted into the short message for personal information transmission. The additional identification information differentiates the short message for personal information transmission from other short messages.

Therefore, receiving mobile terminal(s) can distinguish the use of short messages according to the identification information.

Although the identification information can be inserted into any available data field for the short message, the first portion of the user data field for short messages preferably

includes a personal information identifier field "//piid" into which the identification information is inserted.

The personal information receiving procedures will next be described. FIG. 3 is a flowchart of a personal information receiving method using a mobile terminal according to the present invention.

Referring to FIG. 3, upon receiving a short message (S300), a receiving mobile terminal first determines if the received short message is for personal information transmission (S301). Namely, the receiving mobile terminal determines whether the short message is for personal information transmission by checking if the short message has an "//piid" field, i.e. the identification information.

If the received short message is for personal information transmission, the receiving mobile terminal displays the received short message on the liquid crystal display window. Here, the mobile terminal can display the received short message and also generate a tone to indicate the receipt of a short message using a speaker or a buzzer. Thereafter, the user of the receiving mobile terminal can determine whether to store the message displayed on the liquid crystal display window (S302). When the user enters a command to save the short message, for example, by pushing a 'save' button on the key pad of the mobile terminal, the mobile terminal automatically stores the personal information transmitted by the short message into a storage unit for storing telephone number list (S303). However, if the user decides not to store the received short message, the user can either do nothing or enter a command such as pushing a 'cancel' or 'delete' button to cancel the received short message, depending upon the model of the receiving mobile terminal.

If the received short message is not for personal information transmission, the mobile



terminal processes the received short message according to the procedure for processing a general short messages (S304).

The SMS is an additional service which allows transmission of information related to various available services or information on daily life, by text, through a the liquid crystal display window of mobile terminals. Using the SMS in connection with tools of a Code Division Multiple Access (CDMA) system network such as a MSC, home network location register (HLR), voice mail system/fax mail system (VMS/FMS), interactive voice response (IVR), and short message entity (SME), a mobile telecommunication subscriber or user can send/receive short messages in text form.

Particularly, when transmitting a short message using the CDMA network, the short message is transmitted from a mobile terminal to a MSC through a base station which includes a BTS and a BSC. The MSC transmits the short message to an SMS center and the SMS center stores the transmitted short message to a database connected to the SMS center. The SMS center then attempts to transmit the short message to a receiving MSC connected with a receiving base station which serves a receiving mobile terminal. Here, the receiving mobile terminal is located using the HLR of the mobile station. Thus, the SMS center transmits the short message to the receiving base station through the receiving MSC, and the receiving base station transmits the short message to the receiving mobile terminal. Subsequently, the SMS center reports the result of the short message transmission to the sending mobile terminal which sent the short message. In the above process, the short message can be transmitted to the receiving mobile terminal through an access channel or a paging channel as well as a traffic channel.

FIG. 4a ~ 4f show text displayed in a liquid crystal display window of a mobile

terminal in personal information transmission mode in accordance to the present invention.

As shown in FIG. 4a, when a user manipulates the menu of the mobile terminal and selects the personal information menu, the liquid crystal display window displays menu items such

as "1. Personal Information Setting Menu" by which personal information can be set and "2.

Personal Information Transmission Menu" by which personal information can be transmitted.

If the user selects the menu item to set personal information, the liquid crystal display window of the mobile terminal will display text related to the personal information.

Namely, as shown in FIG. 4C, "Personal Information Name Setting" mode can be displayed, by which a name can be entered. Here, other items not shown in the figures can also be made to be displayed such as "Personal Information Address" mode by which address(es) of, for example, business, home and email can be entered; "Personal Information Telephone Number" mode by which phone number(s) of, for example, business, home, mobile terminal such as PCS, DCN, facsimile can be entered; and "Business Name" mode by which business name can be entered.

Upon entering a name, the user can set and store the name by entering an appropriate command. In the example illustrated by FIG. 4A, the command is a "confirm" icon displayed on the liquid crystal display window. Subsequently, the user may input a command to set other information. In the above example, the command is a "next" icon displayed on the liquid crystal display window. Although the example allows the user to enter commands through the display, the commands may be entered through other methods such as menu keys on the mobile terminal.

If the user inputs a command to set other information, a "Personal Telephone Number Setting" mode, by which the phone number can be entered, may next be displayed as shown

in FIG. 4C. As in the name setting, the telephone number can be set and stored by entering the appropriate commands. Upon setting the phone number, other menu items may be displayed and set. When the last menu item is displayed and/or set, the "1. Personal Information Setting" mode is complete and the liquid crystal display window of the mobile terminal displays again the menu items in a previous level, i.e. "1. Personal Information Setting" mode and "2. Personal Information Transmission" mode as shown in FIG. 4D.

If the user selects the menu item to transmit a personal information, i.e. "2. Personal Information Transmission" mode, the liquid crystal display window of the mobile terminal would display text related to transmission of the personal information such as "Receiver Number Input" mode as shown in FIG. 4E, by which a phone number of receiving mobile terminal(s) can be entered. Accordingly, after the user inputs the telephone number of a receiving mobile terminal and enters a command to send the personal information by, for example, pushing "Send (or Speak)" button of the keypad of the mobile terminal, the liquid crystal display window of the mobile terminal displays a text as shown in FIG. 4F indicating that the transmission of the personal information is complete.

In the above transmission, the personal information may be sent using the SMS as described above. Namely, a "personal information identifier" is inserted or attached to the first portion of the user data field for SMS service, thereby distinguishing a SMS for personal information transmission from other general SMS messages. The SMS data field will later be explained in more detail with reference to FIG. 6 below.

FIG. 5 shows text displayed on a liquid crystal display window of a mobile terminal in personal information receiving mode in accordance to the present invention.

Particularly, a mobile terminal corresponding to the phone number shown in FIG. 4E

receives a short message including the personal information transmitted from the sending mobile terminal according to the procedure described with reference to FIG. 4A ~ 4F. Here, the receiving mobile terminal which receives the short message determines if the short message has a "personal information identifier." If the short message has the "personal information identifier," the liquid crystal window of the receiving mobile terminal displays a receipt of the personal information and inquires if the user wishes to store the personal information. Here, the user may also be notified of the arrival of the short message through the speaker or buzzer of the receiving mobile terminal.

Upon receiving the short message including the personal information, if the user enters a command to store the personal information by, for example, pushing a "Save" key on the receiving mobile terminal, the received data is automatically added and stored into the telephone number list of the mobile terminal. On the other hand, if a command not to store the personal information is entered by, for example, pushing a "Cancel" key on the receiving mobile terminal, the received short message is deleted without storage.

FIG. 6 shows a user data field for a short message according to the present invention. The present user data field for a short message includes a subparameter\_ID field 500 which is a subparameter identifier; a subparameter\_len field 501 which indicates the length information of the short message other than the subparameter\_ID field 500 and the subparameter\_len field 501; a MSG\_encoding field 502 which represents a coding type of the short message; a MST field 503 which indicates the type of the message such as broadcasting, point-to-point, or voice mail; a Num\_field 504 which represents the character length Num\_field by which value the data of Chari 505 is repeated. The Chari 505 is a user data field for SMS into which the "//piid" field can be inserted to distinguish a SMS for

personal information transmission from other general short messages. For example, personal information may be inserted into Chari 505 in the form of "//piid name telephone number." Finally, the last field is a reserved field 506.

As described above, the method of sending and receiving the personal information using the mobile terminal in accordance to the present invention enables users to conveniently send personal information to other mobile terminal(s) or receive information from other mobile terminal(s). For example, business cards are exchanged during a business meeting and may be stored in the mobile terminal by hand. However, the present invention allows an exchange of such personal information conveniently by an on-line transmission and automatic storage of the personal information. Furthermore, variable information can also be stored in the mobile terminal when a mobile terminal is used for public activities during business.

The foregoing embodiments are merely exemplary and are not to be construed as limiting the present invention. The present teachings can be readily applied to other types of apparatuses. The description of the present invention is intended to be illustrative, and not to limit the scope of the claims. Many alternatives, modifications, and variations will be apparent to those skilled in the art.